

Monday 29th July 2019

The 2019 Meetings of Experts: the second year of the new format

The 2019 series of Meetings of Experts (MXs) for the 1972 Biological and Toxin Weapons Convention (BWC/BTWC) is the second year of the latest of the work programmes held between the five-yearly Review Conferences of the Convention. These work programmes are commonly known as the ‘inter-sessional process’ or ‘inter-sessional programme’. The current work programme was agreed at the Meeting of States Parties (MSP) held in December 2017. That MSP had been delegated by the Eighth BWC Review Conference in 2016 to decide on this. The 2017 MSP agreed to the holding of five distinct MXs over eight days in the middle of each of 2018, 2019 and 2020, together with a four-day MSP towards the end of each calendar year. The Chair of the 2019 MSP is Ambassador Yann Hwang (France) with Ambassador Adrian Vierita (Romania) and Ambassador Andreano Erwin (Indonesia) as Vice-Chairs.

In summary, the 2019 MXs, their dates, their topics, and their Chairs appointed through consultations following the 2018 MSP are:

- MX1 – 29-30 July (Monday-Tuesday) *Cooperation and Assistance, with a Particular Focus on Strengthening Cooperation and Assistance under Article X* – Ambassador Victor Dolidze (Georgia)
- MX2 – 31 July-2 August (Wednesday & Friday [Thursday is a public holiday]) *Review of Developments in the Field of Science and Technology Related to the Convention* – Yury Nikolaichik (Belarus)
- MX3 – 5 August (Monday) *Strengthening National Implementation* – Melanie Reddiar (South Africa)
- MX4 – 6-7 August (Tuesday-Wednesday) *Assistance, Response and Preparedness* – Usman Iqbal Jadoon (Pakistan)
- MX5 – 8 August (Thursday) *Institutional Strengthening of the Convention* – Laurent Masméjean (Switzerland)

The 2018 MXs were the first year of this new format. Experience showed that having Chairs for each topic spread the workload and enhanced the effectiveness of the meetings. While the five separate meetings had a benefit of focusing the substantive work, it also had limitations (as in earlier work programmes) in making connections between related topics dealt with in separate meetings. To take one example: there are many overlaps and synergies between the topics in MX1 and in MX4; enabling discussion of the beneficial connections has been a recognized challenge of the evolving MX formats.

As each MX is a stand-alone activity with a different occupant in the Chair, each meeting needs to have its own opening formalities, such as adoption of its agenda and decisions on participation, and its own adoption of a report. The official reports from each of the MXs in 2018 were essentially procedural as the MXs are intended to exchange ideas, innovations and perspectives rather than reach consensus positions. When the new format for the MXs was decided in 2017, many delegations anticipated that the outputs of the Meetings would be used as inputs for the annual MSP later in the year. Such delegations were disappointed last year when consensus on this matter could not be found and the 2018 MSP adopted a final report in which the key sentence of the section on the

work of the MXs read: ‘No consensus was reached on the deliberations including any possible outcomes of the Meetings of Experts.’

The topic under discussion during MX1

The overarching topic for MX1 is ‘Cooperation and assistance, with a particular focus on strengthening cooperation and assistance under Article X’. Article X of the BWC is about access to the life sciences for peaceful purposes, a key bargain within the Convention that the renunciation of biological weapons and the implementation of controls over hostile uses of the life sciences have to be balanced so that there is not hindrance to the use of the life sciences for peaceful purposes. Article X also provides that states parties ‘undertake to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the use of bacteriological (biological) agents and toxins for peaceful purposes’. Cooperation and assistance goes further than Article X, including other aspects such as capacity building, and MX1 will be discussing a number of agreed sub-topics.

MX documentation and printed information

The MX agendas, which list the agreed sub-topics for each meeting, and a number of working papers have already been issued as formal MX documents. Additional papers are likely to be issued. These papers, together with statements and presentations made within the MXs, can be found via the BWC’s official website run by the Implementation Support Unit (ISU) – the latest meetings are linked from <<https://www.unog.ch/bwc/meeting>>; official documents can also be obtained via the UN documents server at <<http://documents.un.org>>. Official documents for MX1 start BWC/MSP/2019/MX.1/, for MX2, BWC/MSP/2019/MX.2/, and so forth.

Financial situation

The financial situation for the BWC remains difficult with non-payment of agreed assessments by a number of states parties causing a cash flow problem. While some of these arrears eventually appear as late payments, the ongoing deficits have put BWC activities at risk – including meetings [the 2018 MSP was shortened by a day for its formal proceedings and that day was taken informally with no interpretation, putting a number of delegates at a disadvantage] and the support for the ISU [the Convention on Certain Conventional Weapons lost its ISU owing to financial reasons]. The 2018 MSP decided to establish a Working Capital Fund ‘solely as a source of short-term financing pending receipt of reasonably anticipated assessed contributions’ which has received some voluntary donations and more are expected in the future.

BWC membership

Membership of the BWC is currently 182, the most recent ratification being that of the Central African Republic on 25 September 2018. There remain five signatory states [i.e., signed the Convention before it entered into force but have yet to ratify it] and ten states which have neither signed nor ratified the Convention. While there has not been any ratifications or accessions thus far in 2019, there are signs of progress. For example, South Sudan announced in June that it was close to ratification, following a Cabinet decision in support of this.

Universal membership of the Convention is a long-established aspiration and a number of activities take place on a regular basis, such as regional workshops, to assist and encourage countries that are not yet members to join.

This is the first report from the series of five Meetings of Experts for the BWC which are being held from 29 July to 8 August 2019 in Geneva. These reports have been produced for all BWC meetings since the Sixth Review Conference in 2006 by the BioWeapons Prevention Project (BWPP). They are posted to <<http://www.bwpp.org/reports.html>> and <<http://www.cbw-events.org.uk/bwc-rep.html>>. An email subscription link is available on each page.

The reports are prepared by Richard Guthrie, CBW Events, who can be contacted via <richard@cbw-events.org.uk>.

Tuesday 30th July 2019

The start of the Meetings of Experts: MX1 - cooperation and assistance

The first Meeting of Experts (MX1) in the 2019 series opened on Monday morning with Ambassador Victor Dolidze (Georgia) in the Chair. Owing to refurbishment work in the Palais des Nations, MX1 opened in Room XX [renowned for its elaborately decorated ceiling] instead of the usual location for BWC meetings two floors below. One advantage of using Room XX is that the proceedings can be webcast via <<<http://webtv.un.org/>>>.

After brief opening formalities, six sub-topics were covered during Monday, the full titles of which can be found in the agenda for MX1. There was a full day of activities which means that this report can only be a selective snapshot of proceedings. The background information document [BWC/MSP/2018/MX.1/2] produced by the Implementation Support Unit (ISU) for the MX1 held in 2018 contains much information relevant to the discussions this year.

At the end of the formal proceedings there was a chance for a short collective statement by some non-governmental organizations on MX1-related issues. The NGO contributions in each MX will be posted by the ISU to the BWC website.

Consideration of the Article X reports by states parties

A number of delegations noted the low number of such reports submitted. The ISU highlighted that the number of Article X reports in any year has never reached double figures and noted that it was not clear how the information within the reports was used by readers. The UK spoke to its working paper [WP.5] that provides an 'indicative overview' of the range of UK activities that 'support the aims and objectives of Article X'. A number of other delegations, for example, China, France, India and Japan, made statements indicating the scope of their support for Article X-related activities. A number of recipients of assistance took the floor to report on supported activities; for example, Morocco illustrated how assistance received for its implementation of the BWC had made this more effective and Kenya described the role of assistance in building its national capacities. Germany noted the key importance of a sense of 'national ownership' of projects by the recipients. There was some discussion on whether there should be a standard format or template for submission of Article X reports. There was a recognition that this might make it easier to compile reports and make it easier to compare the contents of different reports; but there was also a recognition that each country's experience of Article X was different and so there needed to be flexibility in how some information was conveyed in reports. Australia highlighted its paper from the 2018 Meeting of States Parties (MSP) [WP.2 of that meeting] which discussed report formats, encouraged others to consider using its suggested template, and expressed interest in knowing if anyone might have identified possible improvements when preparing their reports. Iran suggested that for reports to be 'meaningful' they had to cover all aspects of Article X and highlighted the section of the Article that referred to 'fullest possible exchange'.

The Assistance and Cooperation Database

It was highlighted that usage remains low, despite rebuilding of the database. The ISU noted that the first iteration of the database was unfunded when the Seventh Review

Conference decided to establish it in 2011 and that an enhanced database system was only able to be developed following a voluntary offer of financial resources from Ireland. In discussion, it was suggested that requests and offers were not always well defined and greater clarity might increase usage. Suggestions were made that the ISU be more proactive in operating as a clearing house, potentially even engaging a cooperation and assistance officer; financial implications of such a move were noted. There was some discussion about widening the database coverage to include non-governmental offers with questions raised about how any such offers could be validated. China noted that one of its database offers related to workshops on capacity building of biosafety laboratories organized with the Chinese Academy of Sciences at the Wuhan Institute of Virology with sponsored participation of scientists from developing countries.

Identification of challenges and obstacles and possible means of overcoming them

The USA spoke to its paper [WP.1] which has a particular focus on interactions with the private sector and what that delegation describes as the ‘environments in which these industries can thrive’. Venezuela (on behalf of the non-aligned) spoke to its paper [WP.3] which is a restatement of earlier proposals for an Article X compliance mechanism and a co-operation committee. Iran spoke to its paper [WP.4] which is focused on what that delegation describes as ‘restrictive policies’ relating to transfer controls. There was a technical presentation under this sub-topic by the USA on its Export Control and Related Border Security Program <<<http://www.state.gov/export-control-and-related-border-security-program/>>>.

Development of guidelines and procedures for mobilizing resources

MX1 was informed that 20 experts had received assistance enabling their participation in the series of MXs via the ISU-coordinated sponsorship programme funded through voluntary contributions. In the last 12 months, the sponsorship programme has been supported by donations from Australia, Canada, Germany and the EU. The ISU noted that Norway had stated during the 2018 MSP that it was planning a voluntary contribution in support of Article X activities. India noted many Article X contributions are given in kind, so don’t always have a direct financial value, and suggested a voluntary trust fund could be established to provide support for cooperation and assistance activities.

Facilitation of education, training, exchange and twinning programmes

This sub-topic focused on human issues. The ISU highlighted that a workshop of 20 young life scientists would be held at the weekend as part of the ‘Fostering Biosecurity Networks in the Global South’ project sponsored by the EU. Germany noted its Munich Medical Biodefence Conference, which was listed as an offer on the Cooperation and Assistance Database as there was some support available for participants from lower per capita GDP countries. The United Arab Emirates spoke of a conference it is organizing for October 2019 on sustainable biosafety, that follows three others it had held on related topics in recent years.

Promotion of capacity building

The UK spoke to its paper [WP.2] that provides an overview of the British Medical Journal Clinical Decision Support Training Initiative <<<http://cds.bmj.com>>>, which was then described in a technical presentation by the BMJ [as a Guest of the Meeting]. This was followed by a technical presentation by Hungary on the European Research Infrastructure on Highly Pathogenic Agents <<<http://www.erinha.eu>>>.

Side event

There was one side event on Monday, convened by Russia on an international conference held in Sochi in June entitled “Global biosecurity challenges. Problems and solutions”.

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Wednesday 31st July 2019

Conclusion of MX1 and a look forward to MX2 - science and technology

Tuesday saw the conclusion of the first of the 2019 series of Meetings of Experts (MXs) with a continuation of discussion of promotion of capacity building before moving on to the sub-topic of collaboration with international organizations and networks and adopting a factual report. There were also planning consultations for the next Review Conference.

Plenary room proceedings

The proceedings in the plenary meeting room started with a technical presentation from David Harper [as a Guest of the Meeting] who discussed the Chatham House Sustainable Laboratories Initiative <<<https://www.chathamhouse.org/about/structure/global-health-security/sustainable-laboratories-initiative>>>. In a first for the Convention, this presentation was given as a video conference. After a short question-and-answer session, the Meeting moved back to statements from delegations. Venezuela/NAM suggested that there was much remaining to be done in implementing Article X and emphasised elements of long-standing NAM proposals such as an action plan and an Article X implementation mechanism. A number of delegations gave statements on activities being undertaken such as training courses and regional workshops. The European Union and the World Organization for Animal Health (OIE) also gave statements.

After a short break for delegates to consider the draft, the Meeting adopted a factual report of its proceedings. Following past practice, the report will have a summary of discussion appended to it produced by the Chair under his own authority and thus which has no official status. The status of this annex is less important than its purpose – to provide a record of issues under discussion without drawing conclusions in a similar way to the synthesis papers that had been produced after the MXs in earlier work programmes

Reflections on MX1

Article X and the broader issues of cooperation and assistance bring together a cluster of topics for which there are long-standing divergence of views between delegations. An MX was never going to be a forum in which there was likely to be any significant political change. Perceptions of Article X remain closely related to how the BWC is seen overall. For those who see the BWC first and foremost as a disarmament and security treaty, the role of Article X is primarily to ensure that the prohibitions to prevent the use of disease as a weapon do not unduly hinder peaceful activities. For those who see the BWC as having a broader remit perceive all the articles as carrying equal significance and therefore deserving of equal implementation effort. There are many who hold positions somewhere in between these two, with many perceiving the global benefits of activities such as capacity building and efforts to control infectious disease as worth pursuing in their own right, irrespective of BWC provisions. Where on this spectrum any particular delegate may sit depends on a number of political, geographic and economic influences.

Are there ways to understand success or otherwise for MX1? There were fewer working papers submitted this year for MX1 [5, compared with 12 in 2018]. On the other hand, there was improved interactive discussion over the year before, which itself had been a great improvement on previous practice in this regard. From the perspective of

this author, the key test for all of the MXs is not so much what goes on in the room itself, but what are the wider, real world impacts that result from interactions at the Meetings. Concrete practical steps are being examined and elaborated. A simple example of one of these would be the BMJ Clinical Decision Support Training Initiative on which there was a technical presentation on Monday. This a tool built by doctors for doctors that can aid in those most difficult diagnoses – diseases which most health practitioners do not see on a regular basis but which can have significant consequences that go much wider than the individual patient. Awareness of the availability of such tools through interactions at the MX has a beneficial real-world impact. In terms of collective steps, the proposal in MX1 that might have the greatest impact on future BWC activities is the suggestion by India for a trust fund, from voluntary contributions, to support cooperation and assistance activities.

Preparations for MX2

The overarching topic for MX2 is ‘Review of Developments in the Field of Science and Technology Related to the Convention’. The Meeting will be discussing a number of agreed sub-topics, listed in the official agenda. The ongoing rapid advances within the life sciences mean that the BWC operates within a rapidly changing scientific and technological (S&T) context. These advances bring new positive opportunities for peaceful uses, such as novel medical treatments, but also lead to new negative opportunities to interfere with the processes that support life. The wide variety of these potential hostile uses lead to changes in the nature of risks and threats the overall regime to control biological weapons will need to counter. The BWC is at the core of this regime. Better understanding of the changing context is seen as critical to ensure efforts to control biological weapons remain relevant and effective at both the international and national level. Activities taking place under the auspices of the Convention cannot operate effectively unless this constantly changing context is well understood and there are tools available to assess risks and benefits in an effective and timely manner. In recent years, much discussion has focused around methods by which reviews of S&T developments might be carried out in order to allow the BWC and its states parties to effectively respond to this constantly changing context.

The background information document [BWC/MSP/2018/MX.2/2] produced by the Implementation Support Unit (ISU) for the MX2 held in 2018 contains much information relevant to the discussions this year.

Review Conference preparations

Before the start of the formal proceedings on Tuesday, the Chair of the 2019 Meeting of States Parties (MSP), Ambassador Yann Hwang (France), held informal consultations with delegates from states parties to discuss some key issues in preparation for the Ninth BWC Review Conference to be held in 2021. Owing to the plans for further refurbishment of the Palais des Nations, there will be reduced space for conferences while construction work is being undertaken. Therefore, decisions by states parties at the December MSP on timing and duration of the Review Conference and its associated preparatory meetings would be useful for planning purposes. Past practice has been to take such decisions at the MSP before the Review Conference, but the prevailing circumstances may mean that all conference facilities will have already been reserved for other purposes by the time of the 2020 MSP.

Side Event

There was one side event on Tuesday, convened by the Chinese Ministry of Foreign Affairs and the Chinese Academy of Sciences, on the topic of ‘Capacity Building of Biosafety Laboratories’.

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Friday 2nd August 2019

MX2 - future developments, science advice and codes of conduct

The second of the Meetings of Experts (MXs) opened on Wednesday with Yury Nikolaichik (Belarus) in the Chair. The overall topic for MX2 is 'Review of Developments in the Field of Science and Technology Related to the Convention'. The Chair took items in a different sequence to the order they appeared on the agenda, this was not without controversy. The meeting thus started its substantive work with agenda item 7 'Any other science and technology developments of relevance to the Convention and also to the activities of relevant multilateral organizations such as the WHO, OIE, FAO, IPPC and OPCW' before moving on to agenda item 6 'Development of a voluntary model code of conduct for biological scientists and all relevant personnel, and biosecurity education, by drawing on the work already done on this issue in the context of the Convention, adaptable to national requirements'. The meeting briefly moved on to the next sub-topic of risk assessment; coverage of this will be in the next report. At the end of the formal proceedings, a short collective statement was given by some non-governmental organizations on MX2-related issues. After the plenary had finished, a poster session was held outside of Room XX that went into the evening.

It was announced that the second week of this series of MXs will remain in Room XX; the initial plan would have seen the series move to the Assembly Hall.

Thursday was a public holiday in Switzerland, meaning the Palais des Nations was closed, and so further proceedings of MX2 were held over until Friday.

Agenda item 7

Following the usual formalities of starting a new meeting, such as adoption of the agenda, etc., the morning started with three technical presentations from Eleonore Pauwels of the Wilson Center [as a Guest of the Meeting], from the Organization for the Prohibition of Chemical Weapons (OPCW), and from the World Health Organization (WHO). The presentations were on the interface between biosciences and cybertechnologies; on science advice within the OPCW, including the Scientific Advisory Board (SAB); and on foresight in relation to dual-use research, respectively. Each was followed by very detailed interactive question and answer sessions, meaning that these presentations took most of the morning. The following is therefore a distillation of key points made in the room by the presenters or by other participants.

There was considerable emphasis on the point that 'convergence' can mean much more than just overlap – some convergences between the biological and cyber spheres are game changers that will impact upon the world both positively and negatively. Many are likely to be complex hybrid systems that will be difficult to put into traditional categories. In biology, positive utilities of advances in the life sciences, are often the best defence against negative utilities of such advances, e.g., new vaccines against modified disease agents. In a similar way, the best defence against using machine learning on cyber systems can sometimes be effective defences also using machine learning. Understanding the significance of new developments is key to science advice, which needs to be part of a broader process that uses science to support decision making. Science advice has to be an on-going process, with on-going dialogue between policy making bodies and scientific

advisors. Science advisors need to be engaged with the wider scientific community so that they can understand where expertise lies. All SAB reports are now on the OPCW website and so it is possible to see how science advice has evolved in the chemical context.

Codes of Conduct (agenda item 6)

Iran spoke to the elements of its paper [WP.5] that fell within this agenda item. Technical presentations were then given by France on its Conseil national consultatif pour la biosécurité (CNCB) [National Advisory Council for Biosecurity] and by the OPCW on the Hague Ethical Guidelines – both of which, by coincidence, date back to 2015. These were followed by a mix of questions and comments on the presentations and by statements. There were many references back to the China-Pakistan paper [WP.9 of MX2 2018] which was a starting point for many interventions. There was an emphasis from many delegations that codes should be adopted voluntarily and not forced upon states parties – such that these are practices that do not add to legal obligations for states parties under the BWC. It was also noted that some governments in favour of codes would prefer professional and learned societies to draft any codes. The contexts for codes of conduct were highlighted, in that they shouldn't hinder peaceful activities and they have to be part of a broader process of education and awareness in which there are ongoing interactions. While disciplinary context is important, it was noted that codes need to work across different disciplines, and also to be flexible enough to apply to the varied work within disciplines. It was identified that there was no code that could cover all contexts. Most discussion in the room was about the need for codes in national contexts [perhaps because national was in the full sub-topic description] with far less said about matching codes for researchers doing the same work in different countries – indeed who would decide on such a code? A key aspect of the Hague Ethical Guidelines is that they are not a code in themselves, but a set of guidelines that help enable the development of appropriate codes. If codes in the life sciences are being developed on a national basis, they could benefit from further discussion of global benchmarks as to what constitutes good research behaviour.

The agenda vs the programme of work

The terms 'agenda' and 'programme of work' are often used interchangeably, but in international diplomacy they have specific and distinct meanings. Formally, an agenda is simply a list of subjects to be discussed. A programme of work is sometimes put together to illustrate timings simply by estimating how long each item might take and so for a meeting held over more than one day busy delegates or experts can be guided by this. A programme of work might take items in a different order to the agenda owing to the travel commitments of some participants that might contribute to particular items. Sometimes the sequence may be changed for intellectual reasons. At the start of MX2, the Chair explained the re-ordering 'so that delegations could receive the freshest information about events in other platforms and about the potential trends that could be discussed in the BWC'. For example, discussion of the broader aspects of developments in the life sciences had a useful impact on discussion of codes.

Side Events

There were four side events held on Wednesday. Breakfast events were convened by Russia entitled 'Scientific Advisory Committee' and by Switzerland on 'Spiez Convergence, Report of the third workshop'. Two at lunchtime were convened by India on 'Emerging Landscapes of Science and Technology: New Frontiers and Challenges in Bio-threat Detection and Mitigation' and by the University of Hamburg Centre for Science and Peace Research, the Johns Hopkins Center for Health Security and the University of Sussex on 'Strategies for the Risk Assessment of Genome Editing'.

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Monday 5th August 2019

The conclusion of MX2 and a look to MX3 on national implementation

The second of the Meetings of Experts (MXs), on the topic of ‘Review of Developments in the Field of Science and Technology Related to the Convention’, concluded its proceedings on Friday after the break caused by the public holiday in Switzerland on Thursday. Two substantive agenda items were discussed and the meeting went on to adopt its procedural report after a novel amendment had been proposed.

Risk and benefit assessment

This item had started in a brief session on Wednesday afternoon when the USA spoke to its working paper [WP.3] outlining risk assessment tools, followed by the UK on its paper [WP.6] which proposed that the MX explores the applicability of available frameworks that could be used in future. There was also a technical presentation by Japan on national approaches to risk assessment of leading-edge life sciences. On Thursday, the meeting started with technical presentations from Malaysia on their National Laboratory Biosecurity and Monitoring Checklist and outreach programme for the biosecurity checklist; from Belarus on biological risk assessment and management in that country; and from France on the Haut Conseil des Biotechnologies (HCB) which includes a scientific committee alongside an economic, social and ethics committee composed of a broader representation from society. Katie Bowman [as a Guest of the Meeting (GoM)] informed MX2 of the workshop that had been held on Thursday that had examined frameworks that could be used as qualitative tools for risk analysis. Owing to travel commitments, France gave a second technical presentation on gene drives relating to the later agenda item on developments; however, the juxtaposition was useful, as it put risk and benefit analysis in context with a real-world case study. Switzerland spoke to aspects of its paper [WP.2] that fell within this agenda item, noting that assessments had to be ongoing, highlighting newly available information on long-term effects of CRISPR techniques on genome instability which may alter the risk/benefit balance of potential applications. The interactive session was detailed. The value of identification of benefit useful for the implementation of Article X was identified.

Review of science and technology developments

Germany spoke to its paper [WP.1, co-sponsored by the Netherlands and Sweden] which proposed a Scientific and Technological Experts Advisory Forum (STEAF). Switzerland highlighted parts of its paper [WP.2] which included conclusions from the ‘Spiez Convergence’ conference in 2018. Australia outlined its paper [WP.4] looking at the implications of synthetic biology and policy responses. Iran spoke to elements of its paper [WP.5] not already covered. Russia gave a technical presentation on review of science in that country and concluded there was a need for a new scientific advisory body. Nancy Connell, Johns Hopkins Center for Health Security, [as a GoM] spoke of the challenges of global catastrophic biological risks and how developments could have positive and negative influences on them. In discussion there was broad agreement and much common ground on a need for effective review of scientific and technological developments, but divergences on what might be the best method. Most delegations expressed an interest in

some form of new meeting format or dedicated body; a notable exception was Iran which expressed skepticism in relation to anything new. A number of delegations expressed hopes that continued work could lead to a substantive proposal that might achieve consensus at the Ninth Review Conference.

Adoption of the procedural report

Discussion of the report for MX2 took the meeting past the availability of the plenary room, so the MX moved to Room XXVI, although it was only there for about about half an hour. In a new move, Russia had brought forward an amendment for the procedural report, citing the mandate from the 2017 Meeting of States Parties that MX reports should include ‘possible outcomes’. The amendment suggested that MX2 had been in favour of establishing the ‘Scientific Advisory Committee’ that Russia had initially proposed in 2016. A number of objections were raised to this amendment, from direct opposition to the concept within the proposal, to suggestions that this would set a difficult precedent as there could be long discussions in the future on possible recommendations. As the report is adopted by consensus, Russia withdrew the proposal. This report, as with that for MX1, contains footnotes relating to certain Latin American countries and NAM statements which are a reflection of regional politics and do not relate specifically to the BWC.

Reflections on MX2

As with MX1, MX2 had highly active sessions, full of detailed discussion, together with much more interaction than previous years. The level of detail was important as keeping on top of relevant scientific and technological developments underpins so much else – effective implementation of Article X relies on nuanced understandings of scientific and technological developments; Article VII is the same. National implementation relies on an understanding of the scientific and technological context. It was said in the room that scientific and technological developments cannot be seen in isolation, but delays in making progress on measures to get improved science and technology review bring with them risks that could impinge on effective implementation of Article VII and Article X.

A look forward to MX3

MX3 will be the first of the one-day MXs and its topic is ‘Strengthening National Implementation’. The importance of national implementation of Convention obligations has been regularly highlighted. There is widespread acknowledgement that there is much room for improvement, not only in countries where specific legislative measures are not yet in place, but also in ongoing review of existing legislation and enforcement activities in all countries to ensure they have kept pace with changing contexts. The emphasis this year in MX2 on risk and benefit analysis has been a useful prelude to MX3 as national implementation by each government can only be effective if it has a clear understanding of the risks and benefits of the life sciences activities that are taking place within the territorial jurisdiction relevant to that government. The background information document [BWC/MSP/2018/MX.3/2] produced by the Implementation Support Unit (ISU) for the 2018 MX3 remains relevant to the discussions this year.

Side Events

There were four side events held on Friday. Two at breakfast were convened by Russia on ‘Recent scientific findings in the sphere of biosecurity’; and by the InterAcademy Partnership and the US National Academies of Science, Engineering and Medicine on ‘Qualitative Frameworks to Assess Risks and Benefits of Advances in Science and Technology: Opportunities for the BWC’. Two at lunchtime were convened by Germany and the Stockholm International Peace Research Institute on ‘Monitoring scientific and technological developments – new approaches to the BTWC’; and by the Max Planck Society on ‘Going viral? Deliberately releasing GM viruses into the environment’.

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Tuesday 6th August 2019

MX3 has more substance than time, and a look to MX4 assistance and response

The third of the Meetings of Experts (MXs), on the topic of ‘Strengthening National Implementation’, was convened on Monday in Room XX for a single day. It was opened with Lebogang Phihlela (South Africa) in the Chair after she had stepped in at short notice to replace the Chair-designate who was unavailable.

MX3 had two sessions of substantial and detailed discussions but this did not prove to be enough time to include all the matters of substance – a set of circumstances that led many states parties to make expressions of regret.

During the afternoon, MX3 heard from Anastasia Trataris-Rebisz, National Institute for Communicable Diseases, South Africa [as a Guest of the Meeting] on the pilot workshop of the Africa CDC Initiative to Strengthen Biosecurity and Biosafety. A short collective statement by some NGOs on MX3-related issues was read out. The statement, including the list of those who signed up to it, is on the BWC website.

Measures related to Article IV – The Implementation Support Unit (ISU) informed the MX it had updated data to its 2018 background paper [update available as document INF.2] and urged delegates to ensure the ‘point of contact’ details for their countries were up to date. The US introduced WP.1 on its National Biodefense Strategy and suggested that other countries with published policies or strategies share them through the BWC. Iran highlighted aspects of WP.3 that fell within this agenda item, but focused mainly on the balances between articles of the Convention. Technical presentations were given by Belgium on responses to an outbreak of African Swine Fever in wild boars in that country; by Mexico on its BWC implementation, including the role of the CANDESTI committee structure; and by the Organization for the Prohibition of Chemical Weapons (OPCW) on national implementation within the Chemical Weapons Convention. A statement on behalf of the 1540 Committee Group of Experts noted that the BWC and 1540 resolution were complementary and mutually reinforcing measures. These were followed by an active question and answer session and then by national statements; many of which provided updates to national implementation measures, with reference made to the utility of governments learning from each other’s experiences. National implementation aspects covered included biosafety, biosecurity, outbreak control and outreach activities.

Quality and quantity of Confidence-Building Measures (CBMs) submissions – The ISU indicated the nine states parties had now made submissions via the new electronic platform funded by Germany and the EU. A total of 75 submissions have been received so far in 2019, slightly down on recent years. Japan introduced WP.2 [co-sponsored by Australia, Germany, Malaysia and Republic of Korea], highlighting the benefits that derive from CBM participation, such as providing information on opportunities for cooperation and assistance. The UK spoke to WP.4 [co-sponsored by Sweden and Switzerland] which focused on challenges in national reporting of vaccine production facilities when there is increased cross-border outsourcing. In discussion, the limited number of submissions was highlighted [there are currently 182 states parties]. It was noted that Honduras had submitted for the first time in 2019.

End of interpretation and adoption of the report – The unprecedented number of interventions by delegations in discussion of the first two substantive agenda items meant it was not possible to complete the further three substantive items in the time during which interpretation was available. This is rare in international meetings as many sessions finish early when they run out of substance to discuss. In many ways this can be seen as a problem of success that the MXs are attracting more interest and interventions.

The difficulties of continuing substantive discussions without interpretation were clear. A number of delegations emphasised the significance of multilingualism within multilateral diplomacy. Others indicated that the items not reached were important to them and so they wished some consideration of the subject matter. The options available to MX3 were to discuss substantive items with the limitations and disadvantages of no interpretation; or to move straight to the adoption of the report in English as had been done on Friday for MX2. In either case this involved a move to Room XXVI. The latter path was chosen, but substantial time was taken in agreeing text for the procedural report to reflect that the agenda could not be completed. A compromise was reached that delegations were invited by the Chair to submit statements they would have made under the uncompleted agenda items so they could be reflected in an appropriate manner in the Chair's paper [often referred to as the 'Chair's summary'] that is appended to the report. Wording was inserted into the report to make clear that these circumstances should not be seen as setting a precedent. The report was finally adopted at 21.30.

Reflections and lessons for the next MX3 – The MX3 agenda contained a considerable amount of work for one day. It had been agreed upon at the 2017 Meeting of States Parties as part of a package that included the agendas and durations of all of the MXs. The practice within BWC inter-sessional meetings is for the Chair not to curtail speakers and to allow all those who wish to take the floor to do so. The Chair made a number of references during the day to the need to keep interventions short and to the point, but many went on for longer than the suggested times. Delegates had access to the draft programme of work and so were aware that the available time was challenging; yet some expressed surprise that there was no more time for discussion except without interpretation. Lebogang Phihlela proved to be a capable Chair in challenging circumstances. It is not clear to this observer of proceedings that there was any action that could have been taken to get through the uncompleted agenda items taking into account the number of presentations, statements and interactive interventions that states parties wanted to make. Clearly there will be a need to take steps in 2020 to try to reduce the workload in MX3. One possibility might be to identify where presentations and statements could be fitted into other MXs – for example, those dealing with outbreaks of disease might have been considered under MX4.

A look forward to MX4 – MX4 will be a two-day meeting on the topic of 'Assistance, Response and Preparedness'. This correlates closely to BWC Article VII but has some wider issues. A key aspect of Article VII is that it deals with the provision of 'assistance' by states parties if a state party is 'exposed to danger' because of a breach of the BWC. This means any use of biological weapons by a state not party to the BWC, or by a non-state entity, would legally not fall within the Article, although many would argue there was a strong moral case for considering it so in practical terms. As no government is likely to have ready all resources required to respond to a severe biological attack, the concept of receiving assistance applies to all. Arrangements by which any alleged use of biological weapons might be investigated have been the subject of some controversy.

Side Events – Two lunchtime side events were held on Monday: convened by Canada, the Netherlands, Malaysia and Uganda on 'Practical Tools to Enhance National Biosecurity'; and by France on 'Platform on voluntary transparency measures'.

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Wednesday 7th August 2019

The first day of MX4 - challenges, guidelines and database

The fourth of the 2019 series of Meetings of Experts (MXs) for the 1972 Biological and Toxin Weapons Convention (BWC/BTWC) opened on Tuesday morning, on the topic of 'Assistance, Response and Preparedness'. It is a two-day meeting that will continue on Wednesday. It was opened with Usman Iqbal Jadoon (Pakistan) in the Chair who noted that Article VII has never been invoked.

MX4 followed the pattern of earlier MXs such that at the beginning of each agenda item any delegations that had submitted working papers relevant to that item had a chance to introduce them. Next would be any relevant technical presentations, usually accompanied by visual aids. There would then be a question and answer session followed by general discussion on the agenda item including prepared national statements as well as more spontaneous comments. During the 2019 MXs these general discussions have been interactive with interventions sparking reactions and responses.

A short collective statement on MX4-related issues by some non-governmental organizations and other representatives of civil society was read out during the afternoon. The statement, including the list of those who signed up to it, is on the BWC website.

At the close of proceedings on Tuesday, MX4 was well ahead of its draft programme of work and so the agenda item under discussion at the close of the meeting will be covered in the next daily report.

There were some points made under more than one agenda item that cut across aspects of Article VII-related responses. The first is that it may not be apparent early on that an outbreak of disease was naturally occurring or deliberately induced; moreover, whether natural or deliberate (or resulting from an accident), there would be some form of emergency in public health terms with numerous agencies involved from the start. A second is that there is a need for relevant capacities to be put in place at local, regional, national and international levels. A third is that there is a desire expressed by a number of delegations to avoid duplication of activities, and in particular that deliberate disease issues should be kept within the BWC through the adoption of a legally binding instrument or protocol. Those delegations making this point were not clear on what practical measures they might accept in the interim before such a protocol might have a chance to be negotiated.

Practical challenges and possible solutions

The UK introduced WP.6 which, although a national paper, is a follow-up to a joint UK-Russian paper [WP.6 of the 2018 Meeting of States Parties (MSP)] on core elements for an effective Article VII response. The new paper highlights the need for international coordination, drawing in particular on management lessons learned from responses to Ebola Virus Disease (EVD) outbreaks, such as the creation of UNMEER. Rebecca Katz, Georgetown University [as a Guest of the Meeting] spoke to a project that examined lessons from EVD response in remodelled scenarios that included elements of deliberate spread of disease. Both interventions came to conclusions that the UN Secretary-General should be a focal point for preparations for Article VII responses. These conclusions were specifically disagreed with by some delegations such as Iran and Russia.

Guidelines and formats for requesting assistance

The need for requests for assistance to be clearly communicated has been recognized for some years. In 2014, South Africa raised questions about how a state party might go about requesting assistance under Article VII, leading to a working paper at that year's MX. Further elaboration of these ideas were contained in WP.3 from the 2018 MX4. There was general support for use of such guidelines and for there to be discussion on this at the Ninth Review Conference. There was some divergence of views on which bodies should receive the formal request. Some suggested that the request should go to the UN Security Council (UNSC) only; some suggested it should be sent out to others at the same time, for example to all BWC states parties or to other relevant international bodies, such as the WHO. Suggestions for other recipients included the BWC Implementation Support Unit (ISU) and the BWC depositary states to act as clearing houses for requests. As Article VII specifically mentions the role of the UNSC, there was some discussion about whether assistance should be dispatched by states before the UNSC had considered the matter. In some ways this was a moot point as the Eighth Review Conference had discussed this in detail, resulting in para 35 of the Final Declaration reading: 'The Conference considers that, should a request for assistance be made, it should be promptly considered and an appropriate response provided. In this context, in view of the humanitarian imperative, the Conference encourages States Parties in a position to do so to provide timely emergency assistance, if requested pending consideration of a decision by the Security Council.'

Article VII database and other methods for improving delivery of assistance

The proposals for an Article VII database, analogous to the Cooperation and Assistance Database dealing with Article X issues, were first made in 2016 in a paper by France and India. Such proposals were received positively at the Eighth Review Conference that year, although no decision was taken to establish it. The proposals still receive wide support and a new paper on the proposals was submitted to the 2018 MSP [WP.7 of that meeting]. MX4 heard a technical presentation by the EU on its Civil Protection Mechanism. Switzerland highlighted that the France-India papers included suggestions that a voluntary fund could also be considered for assistance under Article VII. The Chair noted such a fund might be used in two ways: to build preparedness now or to be held in reserve to assist in the response to an attack if it ever happened.

Mobile biomedical units

For a number of years, Russia has promoted the use of mobile biomedical laboratory facilities in response to disease outbreaks, highlighting benefits illustrated during the west Africa EVD outbreaks. There was a general recognition that mobile labs would contribute to any response effort with the key divergence of opinion being about whether there should be mobile labs as a BWC activity with associated costs managed centrally, or as a roster of units offered by various countries to be deployed in relevant circumstances.

Side Events

There were three side events on Tuesday. One at breakfast was convened by Japan and the BWC ISU on 'Strengthening National, Sub-Regional and International Capacities to Prepare for and Respond to Deliberate Use of Biological Weapons'. The two events at lunchtime were convened by Canada and the BWC ISU on 'Contribution by relevant international organizations to the response in case of the possible hostile use of biological agents and toxins against agriculture, livestock and the natural environment'; and by the Georgetown University Center for Global Health Science and Security and the Nuclear Threat Initiative on 'Strengthening Preparedness and Response Capacity for Biological Events'.

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Thursday 8th August 2019

The closing day of MX4 and the BWC financial situation

The fourth of the 2019 series of Meetings of Experts (MXs) concluded on Wednesday on the topic of ‘Assistance, Response and Preparedness’. Before the plenary proceedings there were informal consultations on the financial situation of the Convention.

The meeting covered two substantive agenda items and adopted its procedural report. A common thread in the two substantive items was integration – in two contexts. The first was integration between agencies, whether local, national or international. In any situation where there is a significant public health problem, whether caused by nature or by deliberate act, there will be numerous agencies operating with different roles, responsibilities and mandates. Effective response requires appropriate cooperation which requires preparation. The second sense of integration was that of policies across human, animal and plant health – the core of the ‘one health’ concept which recognizes that weaknesses in policies dealing with one of these areas can weaken policies in others.

Space constraints mean reflections on MX4 will be held over to the final daily report for this series of MXs.

Exploration of approaches – This agenda item is the hardest to capture in summary for a section heading – its full title is ‘Exploration of approaches by which States Parties, individually or collectively, might contribute to the strengthening of international response capabilities for infectious disease outbreaks, whether natural or deliberate in origin’. The agenda item was started on Tuesday and continued into Wednesday. Australia introduced WP.2 which is an update on its Health Security Initiative for the Indo-Pacific region. Japan spoke to WP.3 on strengthening measures for responding to emerging infectious diseases, including the establishment of a new rapid response team; and to WP.4 that outlined a programme of seminars and workshops on strengthening capacities to prepare for and respond to deliberate use of biological weapons. These were followed by three technical presentations. Belgium provided a briefing on the Laboratoire Fédéral d’orientation (FOL) – a laboratory designed to test unknown samples that are suspected to be of a CBRN nature. The UK introduced the work of the National CBRN Centre, a multi-agency unit which assists civilian response by the police, fire and ambulance services to CBRN incidents. The International Centre for Genetic Engineering and Biotechnology (ICGEB) spoke of the work of the Centre in building capacities. In the discussion that followed, Brazil suggested a need to avoid duplication of other measures such as the WHO International Health Regulations. Switzerland noted a seminar later this year in support of developing a network of designated laboratories to deal with biological incidents. Malaysia spoke of an ASEAN workshop to exchange experiences and good practice in disease response. The EU highlighted preparedness projects funded from its new Council Decision. Synergies between capacity building under Article X and under Article VII were identified, such as improved detection of diseases.

Agriculture, livestock and the environment – The USA introduced WP.1 which draws on its experiences in bringing different arms of government together to counter biological threats to agriculture. Canada spoke to WP.5 which describes activities it supports

through the Global Partnership that build capacity against use of biological agents against livestock. A technical presentation from the International Plant Protection Convention Secretariat described work done on plant pest surveillance and noted that 2020 would be the International Year of Plant Health, prompting comments from the floor that there may be benefits in highlighting this in the MXs next year. In the discussion that followed, China noted challenges of controlling an outbreak of African Swine Fever, as there are no effective drugs for treatment nor is there a licenced vaccine, although vaccine research is progressing. The World Organisation for Animal Health (OIE) provided details of its Performance of Veterinary Services (PVS) Pathway used for capacity building.

A look towards MX5 – MX5 will be the last in the series of MXs for 2019. This will be a one-day MX on the topic of ‘Institutional Strengthening of the Convention’ with just a single sub-topic: ‘Consideration of the full range of approaches and options to further strengthen the Convention and its functioning, through possible additional legal measures or other measures, in the framework of the Convention.’

The BWC financial situation – The Chair of the 2019 Meeting of States Parties (MSP), Ambassador Yann Hwang (France), held informal consultations with delegates from states parties to discuss the financial situation for the BWC which remains difficult. Non-payments of agreed assessments by a number of states parties continue to cause problems. While some of these eventually appear as late payments, the ongoing deficit is sufficiently large to put the MSP at risk. As the financial accounting period is the calendar year, the MSP at the end of the year is always going to be the most vulnerable activity if there is a financial shortfall. In 2018, some economies were made on the MSP by having one informal day of activities without interpretation, putting a number of delegates at a disadvantage. The government of France has a clearly stated position on multilingualism within multilateralism and so the MSP Chair would be extremely reluctant to implement a similar route to financial savings. The Working Capital Fund established by the 2018 MSP is specifically designed not to subsidise non-payment, but to smooth out cash flow during the year. Depleting the fund -- which is not even close to its target value – in its first year to cover the costs of the MSP would render it useless for purposes of supporting core activities such as the ISU. There are also financial implications of decisions that will need to be taken in relation to the Ninth Review Conference to be held in 2021. The key decision is the duration of the Conference itself and its preparatory meetings. During the 2018 MSP, states parties asked for earlier notification of what their assessed contributions would be each year. As contributions are due each 1 January, this means sending the invoices out a few months in advance. As the 2020 MSP would be after the date that the invoices would be sent out for 2021, the budget for the Review Conference would need to have been set before this. The logical meeting to take duration decisions on the Review Conference and its associated meetings is therefore the MSP this December.

Side Events – There were three side events on Wednesday. One at breakfast was convened by the United Nations Institute for Disarmament Research (UNIDIR) and Norway on ‘Gender-responsive BWC? Understanding gender-related impacts of biological weapons and implications for assistance, response and preparedness’. The two events at lunchtime were convened by the United Kingdom and the British Medical Journal on ‘The British Medical Journal’s Clinical Decision Support (CDS) Training Initiative: Its Relevance for the BTWC’; and by France and the Fondation pour la Recherche Stratégique on ‘Outcome of the tabletop exercise for West African States Parties in Lomé in May 2019’.

NOTE: There will be an additional MX report covering MX5. This will be published sometime next week and will be posted at the web locations given below.

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Friday 16th August 2019

MX5 on institutional strengthening and reflections on the series of meetings

MX5 was the fifth, and final, meeting in the 2019 series of Meetings of Experts (MXs) for the 1972 Biological and Toxin Weapons Convention (BWC/BTWC). It was a one-day meeting on the topic of 'Institutional Strengthening of the Convention', held on Thursday 8 August with Laurent Masméjean (Switzerland) in the Chair. Of all of the MXs, MX5 included the subject matter for which the divergence of views have been historically most pronounced. A short collective statement on MX5-related issues by some NGOs and other representatives of civil society was read out during the afternoon. The statement, including the list of those who signed up to it, is on the BWC website.

MX5 proceedings – The bulk of the proceedings for MX5 were on a single substantive agenda item. The UK introduced WP.1 which contains reflections on the protocol negotiations. The USA spoke to WP.2 which focuses on the development of existing tools to strengthen the Convention. Russia introduced WP.3 which summarizes details of the conference held in Sochi in June. Venezuela (on behalf of the non-aligned) spoke to WP.4 which calls for negotiations on a legally-binding instrument. There were two technical presentations. The first was from James Revill of the UN Institute for Disarmament Research (UNIDIR) providing an overview of the protocol negotiations [as UNIDIR does not take a position on the negotiations, the views expressed were those of the presenter.] The second was from Daniel Feakes of the BWC Implementation Support Unit (ISU) on the history and development of the inter-sessional work programmes. The protocol negotiations had been carried out in a forum called the Ad Hoc Group convened by a Special Conference held in 1994. The negotiations came to a halt in 2001. The first inter-sessional work programme was established by the Fifth Review Conference which was resumed in 2002 having been unable to come to a conclusion the year before.

In discussion, a number of delegations suggested that there was currently no prospect of reconciling views on protocol-related issues and noted that the Convention was a product of its time. It was noted that with each year that passes, there are fewer people in the BWC meetings with direct experience of the protocol negotiations. A number of delegations suggested that if the BWC wasn't the forum in which progress could be made then progress would be made in other forums. Others warned of duplication of activities if other forums were used. There were discussions on specific aspects of strengthening the processes of the Convention, such as creation of some form of arrangement for reviewing scientific and technological developments, with some delegations using the opportunity to stress the issues they would like to see progress on in preparation for the Ninth Review Conference, to be held in 2021. On finances, some delegations urged prompt payments of all assessed contributions; some delegations, including Canada and Russia, indicated they were providing voluntary contributions to the Working Capital Fund.

Side Event – One event was convened at lunchtime on 8 August by the Johns Hopkins Center for Health Security, the Nuclear Threat Initiative and the Future of Humanity Institute on 'Powerful actor, high impact biotreats: report from an expert meeting'.

Reflections – A conscious effort is taken in writing these daily summaries to report objectively and not give opinion. However, there are times that this style of reporting does not convey some of the atmosphere of meetings. The following are some personal reflections that do not necessarily represent anyone's views other than the author's own. This chapeau applies to all of the 'reflections' sections of this series of daily reports.

During the MXs, an overwhelming majority of delegates taking the floor would mention in at least one intervention that there were improvements to be made in the activities that fall within the rubric of controls against biological weapons, but there was no common perspective on the optimum way to move forward. There were varying perspectives expressed during the MXs on which was better – to have an overarching additional legal instrument such as the protocol that might take some time to negotiate [and which certainly there could not be consensus on now] or is it better to go for intermediate steps that provide for reinforcement of the BWC and related activities? Views expressed by those who favour a new instrument suggest that intermediate steps would reduce pressure for an overall solution. Others believe that intermediate steps indicate support for the BWC and its reinforcement as well as being of practical benefit.

How strong are the desires of those who want new protocol negotiations? For most states, the only evidence available is the words they express. Words are easy – it is a very simple task to make a strong statement in favour of a particular position. One of the great challenges of observing multilateral interactions is to distinguish whether words said in support of a particular position are being said for ideological reasons, for short-term political benefits, for promoting a strongly-held evidence-based policy, or for other reasons – sometimes it is impossible to tell. One possibility is to examine actions. Some delegations making the loudest calls for new negotiations are those substantially in arrears with payments to the BWC. This is significant – not only would new negotiations be far more costly than the current meetings, it is inevitable that any adoption of an agreed instrument would cost many times more than the current annual budget. The credibility of calls for a new negotiations would be enhanced if this situation were to change.

There is a practical issue for 2020 – the final year of this inter-sessional process. There needs to be some action on the handling of subject matter as MX3 (a one day meeting) ran significantly into the evening while MX1 and MX4 (both two-day meetings) finished at lunchtime on their respective second days. There are many issues that overlap between the different MX topics and so the smooth running of the whole series of meetings might be aided in 2020 if delegations could consider carefully which MX they would present information to.

There are also practical issues for 2021 – the scheduled year for the Ninth BWC Review Conference. Key decisions on the duration of the Conference will need to be taken at the Meeting of States Parties (MSP) this year so budgets can be set. As the next Review Conference is likely to be challenging, there may be benefit in identifying an early nominee to be President of the Conference. Normally this would be decided at the preceding MSP. From the perspective of this author, one of the factors for success of the Sixth Review Conference in 2006 was the early identification of the President. If decisions relating to duration and budget for the Ninth Review Conference are to be taken in 2019, consideration might be given to nominating a President-elect at the same time.

The MXs in 2018 and 2019 have shown themselves to be of significant practical benefit with real world impact. This is not only through the exchange of information and ideas, but also as gatherings through which other practical steps can be facilitated, such as capacity building via the Global Partnership programmes. However, the lack of consensus on a way forward means that the BWC as a political entity is lagging behind where it could be. While the question of whether the MSP can take forward any of the suggestions from the MXs will be important, more significant would be progress toward the Ninth Review Conference. Any package of measures that might be agreed upon in 2021 will have to be finely balanced between competing perspectives.

This is the ninth (and final) report from the BWC Meetings of Experts for 2019. Reports have been produced for all BWC meetings since the Sixth Review Conference in 2006 by the BioWeapons Prevention Project (BWPP). They are posted to <<http://www.bwpp.org/reports.html>> and <<http://www.cbw-events.org.uk/bwc-rep.html>>. An email subscription link is available on each page. The reports are prepared by Richard Guthrie, CBW Events <richard@cbw-events.org.uk>.